CORMORANT MANAGEMENT IN THE NORTHEAST

WORKSHOP REPORT

January 13-15, 1998

Glens Falls, New York

Background

Double-crested cormorant populations in Lake Ontario (NY, Ontario), Oneida Lake (NY), and Lake Champlain (NY, VT) have increased amidst calls for action, including population control, by some anglers, local government officials, politicians, and landowners. Although existing evidence indicates cormorants may have only a small, if not negligible, impact on recreational fishing success, their growing population has been correlated to a changing eastern Lake Ontario sportfishing industry. Increasing numbers of cormorants in the Lake Champlain basin has led to negative impacts on island vegetation and other birds at long-established colonial nesting bird sites.

This regional workshop was designed to bring together fish and wildlife managers and experts working on cormorants to discuss issues brought about by increased political and public calls for fish and wildlife agencies to do something about the increasing population of cormorants. Hosted by the New York State Department of Environmental Conservation and the Vermont Fish and Wildlife Department, the workshop was sponsored by the Northeast Wildlife Administrators Association in cooperation with the U.S. Fish and Wildlife Service and the U.S. Department of Agriculture (Wildlife Services). Ron Regan, Director of Wildlife for Vermont Fish and Wildlife Department, and Gary Parsons, Chief of the Bureau of Wildlife for New York State Department of Environmental Conservation (NYSDEC), chaired the meeting. Bob Inslerman, Region 5 Wildlife Manager for NYSDEC, made arrangements for food, lodging and logistical support.

Workshop Objectives

- Identify and clarify the issues surrounding double-crested cormorants in the Northeast.
- Recommend strategies to address those issues.

Participants

Forty-four individuals registered for the workshop, representing seven states, three federal agencies, the Province of Ontario, Canada, as well as academic

specialists from Cornell University and the University of Vermont. A list of participants is attached (Appendix A).

Meeting Format

The day and a half workshop included a general session with presentations on:

- Population status of double-crested cormorants in the United States and Canada;
- Regional perspectives from the Southeast, Midwest, Canada, and Northeast;
- Impacts of the species on sportfish; and
- Methods and techniques for control.

Three working groups, Biota/Natural Communities, Fisheries, and Human Dimensions were convened to address the degree and scope of concern; administrative, political, ecological, legal and fiscal considerations; human dimensions issues; research and information needs; communication and education needs; and recommended short and long-term program strategies. Each working group had a chair, facilitator, and recorder, and consisted of participants representing various perspectives of cormorant management. Because of the limited amount of time available for discussion, key elements were identified for each topic without benefit of in-depth discussion.

On the last morning, each group presented its findings and recommendations, discussed common themes and potential conflicts, and voted to provide a sense of the most important recommendations made. The meeting agenda, including presenters, is found in Appendix B.

Recommended Strategies

Some of the recommended strategies reflect immediate tasks, whereas others will be long-term or on-going. Due to time constraints, no attempt was made to clarify or consolidate the strategies recommended by the three groups. Thus, it was somewhat difficult to prioritize the recommendations. Those considered to be most important are listed below; the entire list is found in Appendix C. Working group reports for fisheries, biota/natural communities, and human dimensions are found in Appendices D, E and F.

Highest Priority

- Define criteria to identify acceptable impacts of cormorants on fish stocks of concern (both biological and social components).
- Manage cormorant populations on a flyway basis: 1) establish a Cormorant Flyway Technical Committee, and 2) establish regional population objectives for cormorants.

- Conduct studies that will provide additional demographic information to support population modeling. (Information lacking on reproductive success on northern breeding areas and survival in southern wintering areas).

High Priority

- Northeast Fish and Wildlife Administrators should appoint a team to develop a communications plan.
- Regional cormorant management recommendations should include a strong communications component.
- Develop plans to protect known colonies of colonial nesting birds from cormorant invasion. Have involved agencies identify and describe their policies and functions concerning cormorants.
- Develop, with stakeholders and target audiences, a set of protocols and information needs before taking management actions.
- Inventory islands and assess habitat suitability in Northeast (to reflect on potential for expansion of nesting colonies).
- Implementation of control should only be exercised where there is a known unacceptable impact based on scientific data and monitored to evaluate effectiveness.

Common Themes

Participants made the following observations about similarities among the working groups=discussions and recommendations:

- There are biological and social data gaps in what we know about cormorants and the way people feel about them.
- This issue has a biological complexity and an organizational complexity. Within the same agency, there may be differing policies and attitudes about cormorants that make it difficult to develop coordinated, effective communications.
- Better, more effective two-way communications between agencies and stakeholders are needed.
- Agencies are feeling a sense of urgency to come to grips with the issues surrounding cormorants and to do something about them. Participants recognized the need for proactive strategies now, and that their agencies have expectations that this Cormorant Workshop will help them move ahead.
- While participants had different experiences and opinions, they were open-minded and the group product provides a balanced view.
- Cormorants are part of the broad-scale ecosystem, but to some, especially local groups and politicians, the problem is a local issue only.
- This is an evolving issue, and the problems, public involvement needs and management decisions will probably not be static.

Potential Conflicts

Balance between the need for immediate management actions in local areas and the desire to manage cormorants on a flyway basis. There seemed to be general agreement that a flyway management approach is what should be aimed for, but all agreed that more information and data is needed before this can be accomplished. At the same time, specific sites have problems that need to be addressed immediately. The question is how do you meet short-term needs while working on long-term solutions?

Biological significance does not equate with social significance (manager-defined problems vs. stakeholder-defined problems). Managers are prone to applying their own value systems to data, but do not acknowledge that they are doing the exact same thing that they claim the stakeholders are doing. There is a need to find a way to get to a reasonable, rational decision.

Conclusion

The results and recommendations of the workshop will be presented to the Northeast Administrators at the Northeast Fish and Wildlife Conference in Harrisburg, PA in May 1998 by Gary Parsons and Ron Regan. This workshop provided an initial forum for managers and experts to explore the known biological, social and political status of the double-crested cormorant in the Northeast. The group was also able to provide recommendations for additional consideration by fish and wildlife agency administrators.

Appendices

Gary Parsons, New York
Ron Regan, Vermont

Northeast Wildlife Administrators Association

April, 1998

Posted: September 25, 1998

Disclaimer: This document is posted as a public service to the agencies, organizations, and individuals interested in seeking solutions to the growing controversy between cormorants and human interests. The ideas expressed do not necessarily represent the views of the U.S. Fish and Wildlife Service or the Office of Migratory Bird Management.

APPENDIX A

LIST OF PARTICIPANTS

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January 13-15, 1998

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APPENDIX B

CORMORANT MANAGEMENT

IN THE NORTHEAST

A Regional Workshop

Sponsored by:

Northeast Wildlife Administrators Association

In Cooperation with:

USDA, Wildlife Services

US Fish and Wildlife Service

AGENDA

January 13, 1998

- Travel Day
- Dinner on your own
- Hospitality Function at 7:00 PM

January 14, 1998

General session for all participants to hear invited presentation as follows:

8:00 AM Welcome: Gary Parsons, Northeast Wildlife Administrators Association

8:20 AM Population status of nesting double-crested cormorants in the United States and Canada: Laura Tyson, USDA National Wildlife Research Center

8:35 AM Double-crested cormorant impacts on sport fish: literature review and agency perspectives: John Trapp, US Fish and Wildlife Service, Office of Migratory Bird Management

9:00 AM Regional Perspectives

(20 minutes) Southeast: Jim Rodgers, Florida Game & Fish Commission and Mark Tobin, USDA, Wildlife Services

(20 minutes) Midwest: Steve Lewis, USFWS

(20 minutes) Canada: John Harcus, Ontario Ministry of Nat. Resources

(30 minutes) Break

(60 minutes) Northeast: Diane Pence, USFWS, Hadley, MA

Dave Capen, University of Vermont

Jody Enck and Tommy Brown, Cornell University

11:30 AM Questions and answers for all presenters

Noon Lunch

1:00 PM Methods and techniques for control: Mark Tobin, USDA, Wildlife Services, Mississippi State University

1:30 PM Three Cormorant Workshops

- Biota/Natural Community Impacts, Dave Capen (Chair)
- Fisheries Impacts, Robert Lange (Chair)
- Human Dimension Issues, Jody Enck and Tommy Brown (Chairs)

Each workshop will be expected to address the:

degree and scope of concern

administrative/political/ecological/legal barriers and fiscal considerations

human dimension issues including public involvement and educational messages

research needs

recommended strategies to address this issue

5:30 PM Adjourn for day

January 15, 1998

8:00 AM Workshop results and recommendations presented to all attendees by group chairs in 30-minute presentations

General discussion of results/recommendations and finalization of conference report

Noon Adjourn

APPENDIX C

PRIORITY LIST OF RECOMMENDED STRATEGIES

This is the combined list of recommended strategies from all three working groups: Fisheries, Biota/Natural Communities and Human Dimensions. It was prioritized by all workshop participants on the last morning. The list is in priority order.

Highest Priority

- Define criteria to identify acceptable impacts of cormorants on fish stocks of concern (both biological and social components).
- Manage cormorant populations on a flyway basis: 1) establish Cormorant Flyway Technical Committee and 2) establish regional population objectives for cormorants.
- Conduct studies that will provide additional demographic information to support population modeling. (Information lacking on reproductive success on northern breeding areas and survival in southern wintering areas).

High Priority

- Northeast Fish and Wildlife Administrators should appoint a team to develop a communications plan.
- Regional cormorant management recommendations should include a strong communications component.
- Develop plans to protect known colonies of colonial nesting birds from cormorant invasion. Have involved agencies identify and describe their policies and functions concerning cormorants.
- Develop, with stakeholders and target audiences, a set of protocols and information needs before taking management actions.

- Inventory islands and assess habitat suitability in Northeast (to reflect on potential for expansion of nesting colonies).
- Implementation of control should only be exercised where there is a known unacceptable impact based on scientific data and monitored to evaluate effectiveness.

Priority

- Develop and distribute guidelines for modification of fish stocking practices to mitigate cormorant predation effects. Include the communication/education and research needs identified by the Fisheries Group (during the elements of discussion session).
- Initiate and coordinate surveys of cormorant populations and monitoring of productivity throughout the Northeast; develop standard methods for such surveys.
- Priority - modification of stocking practices for fish species preyed upon by cormorants.
- Summarize what we know and communicate it (i.e.- Northeast fact sheet).
- Communication message should be developed by interagency group.
- USFWS and Sea Grant will provide resources as budgets permit.
- Incorporate important research and outreach results in communications plan.

APPENDIX D

SUMMARY OF THE FISHERIES BREAKOUT SESSION

Bob Lange, NYS Department of Environmental Conservation, Chair

The 12 participants in the Fisheries breakout session identified 21 fisheries issues in a brainstorming process. These were then categorized into four main issues: 1) double-crested cormorant (DCC) impacts on fish populations are poorly understood; 2) cormorant impacts on water quality and the underlying ecosystem may impact fish populations; 3) cormorants create several human dimensions issues related to fisheries management; and 4) aquaculture may be impacted by double-crested cormorants. After a discussion of some of the key elements of each of these issues, seven strategies were recommended.

ISSUE 1: IMPACTS ON FISH POPULATIONS ARE POORLY UNDERSTOOD

- Potential impacts to the forage base for game fish.
- Impacts to hatchery stocked fish.
- Impacts to game fish directly.
- How might cormorants benefit game fish?

- Impacts on fish populations in small systems versus large systems.
- Clarify differences in impacts on simple versus complex systems.
- Lack understanding of impacts to fish populations.
- Understanding mortality attributed to DCC as a component of the total.
- Is DCC-caused mortality additive or compensatory?

Note: The group did not attempt to differentiate between problems that are real vs. perceived.

SCOPE

- Cormorant predation on stocked fish is a concern in Eastern Lake Ontario, Lake Champlain and Oneida Lake, and in lakes with landlocked salmon in New Hampshire.
- Concern regarding game fish in Long Island Sound, Massachusetts, Rhode Island (northeast coast) winter flounder: species is under restoration efforts.
- Smallmouth Bass in Lake Ontario/St. Lawrence River.
- Walleye in Oneida Lake.
- Growing DCC populations create potential for concerns in many other waters.
- Atlantic Salmon in coastal rivers, Connecticut River, Northeast Region coastal rivers.

WHY IS IT IMPORTANT?

- Winter flounder - fishermen are restricted while DCC are not (perception).
- True in any stock under restoration.
- Fear of the unknown - cormorants are Anew,@ Aexotic,@ and future of population is unclear.

BARRIERS

- Lack of scientific knowledge.
- Lack of resources to gain scientific knowledge.
- Jurisdiction barriers exist. Local problem but *cormorants are* federally protected.
- Social barriers are attached to warm blooded species.
- Large geographic scope is an impediment to solving local problems.

OPPORTUNITIES

- Puts predator/prey interactions on a higher plane (more attention).

COMMUNICATION AND EDUCATIONAL NEEDS

- One agency needed to coordinate communication.
- More consistency in the message is needed.
- Need to communicate DCC impacts in the context of total mortality (has to be understandable).
- Need to communicate what we know, what we don=t, and what we=re learning.

KEY RESEARCH NEEDS

- Status of fish stocks of concern.
- More comprehensive food habits studies (marine, other than breeding).
- What are the limiting factors on DCC populations?
- Understanding whether DCC-induced fish mortality is additive or compensatory in the context of the total.
- Need to better understand DCC population parameters (productivity, survivorship, dynamics).

ISSUE 2: WATER QUALITY ISSUES AND IMPACTS TO FISH RELATED TO CORMORANTS

- DCC concentrations may cause water quality concerns (guano).
- Fish diseases and parasites may be transmitted by DCC.
- DCCs represent another pathway for fish disease transmission.

SCOPE

- Water quality issues are generally very localized (shellfish) with high concentrations of cormorants.
- Eastern Lake Ontario parasite issue - Brown Bullhead.
- In Northeast, no known examples of fish disease transmission.

WHY IS IT IMPORTANT?

- Localized impacts can create concerns way out of proportion.
- Some real and perceived public health, economic, recreation, risks (drinking water supplies).

BARRIERS

- Local and State health officials= potential involvement.
- Relationship between numbers of DCC and water quality problems unknown.
- Social stigma of killing birds.
- Legal protection.

COMMUNICATION AND EDUCATIONAL NEEDS

- Obligations to inform public about health risks.

RESEARCH NEEDS

- Better understanding of DCC potential as a vector of diseases and parasites.

ISSUE 3: HUMAN DIMENSIONS RELATED TO FISHERIES MANAGEMENT AND CORMORANTS

- What criteria are needed to take a management action?
- What impacts to fishing opportunities and to fish-related economies?
- Is there a limited niche for cormorants in recovering aquatic ecosystems?
- Public perception of impacts to fisheries leads to erosion of social and political support for agency programs.

SCOPE

- Wherever there are cormorants and people.

WHY IS IT IMPORTANT?

- Economics and recreation are a factor.
- Cormorant issues emphasize the conflict between politics and science-based management.
- Emotional issue that can cause polarization.
- Demands agency staff time at a high level.

BARRIERS

- Lack of information (facts).
- Poor communication among agency personnel and to the public.
- Agency people (biologists) are not good at communicating.
- Stakeholders are not clearly identified.
- Competing values exist (including within agencies).

OPPORTUNITIES

- Better communication might Afix@ a lot of the problems with involved stakeholders.

COMMUNICATION AND EDUCATIONAL NEEDS

- Better identify stakeholders.
- Involve professional outreach people.

KEY RESEARCH NEEDS

- Public opinion research - public perception of DCC and their expectations of State and Federal agencies.

ISSUE 4: AQUACULTURE MAY BE IMPACTED BY CORMORANTS

- Impacts on aquaculture facilities

SCOPE

- Not a major concern for Northeast practitioners but could become one in the future.
- We recognize that the aquaculture issue in the Southeast is linked to the life cycle of the double-crested cormorant, which has a major northeast component.

RECOMMENDED STRATEGIES

1. Define criteria to identify acceptable impacts of DCC on fish stocks of concern (both biological and social components).

2. Summarize what we know and communicate it.

3. Implementation of control should only be exercised where there is a known unacceptable impact based on scientific data, and monitored to evaluate effectiveness.

4. Produce a Northeast DCC fact sheet.

5. Priority should be given to the modification of stocking practices for hatchery-reared fish preyed upon by cormorants.

6. Develop and distribute guidelines for modification of fish stocking practices to mitigate DCC predation effects.

7. Include the Communication/Educational and Research needs identified above (during the elements of discussion session).

OTHER ISSUES RAISED

- There is a lot of animosity towards cormorants from the public at large and Directors need to be aware of this.
- Let=s not give administrators more reason to scapegoat cormorants.
- The DCC experience is only one example of many changes in species abundance and distribution (globally) that we do not understand.

APPENDIX E

SUMMARY OF BIOTA/NATURAL COMMUNITIES BREAKOUT SESSION

Dave Capen, University of Vermont, Chair

Participants in the Biota/Natural communities breakout session identified 22 issues of concern, and then consolidated them into four categories: impacts on habitat of other species; interspecies interactions; cormorant population issues; and health and safety issues. Discussion of key elements for all categories combined are summarized below, along with five recommended strategies.

ISSUES

IMPACTS ON HABITAT OF OTHER SPECIES

- Habitat destruction: degradation, ecosystem collapse
- Aesthetic impact of habitat destruction
- Restoration
- Protection of sites

INTERSPECIES (SPECIES/SPECIES) INTERACTIONS

- Rare plants
- Other animal species
- Nongame and game fish
- Positive contribution to biodiversity

CORMORANT POPULATION ISSUES

- Consistent methods for survey
- Response thresholds
- Geographic issues: because species is migratory
- Population objectives need to be regional and local

HEALTH AND SAFETY ISSUES

- Potential human health issues

- Threats to health of other species
- Water pollution and affected air quality

ELEMENTS OF DISCUSSION:

SCOPE OF THE PROBLEM

- Consider where populations of double-crested cormorants (DDC) have persisted for a long time.
- In the Northeast, islands protected from predators are most important nesting sites.

WHY IS IT IMPORTANT?

- Aesthetics of habitat alteration.
- Displacement of other species.
- There is a limited number of predator-free vegetated islands in the Northeast.
- Domino effects of species replacement.
- Direct mortality of plants.

BARRIERS TO ADDRESSING THE ISSUES

- Laws and policies of regulatory agencies.
- Private ownership.
- Public ownership.
- Lack of information on carrying capacity of cormorant habitats.
- Varying public values and opinions.
- Public resistance to certain control methods.
- Political intervention.
- Costs.
- Inability to totally exclude cormorants from islands.
- Funding of population monitoring.
- Lack of coordination of management activities among management agencies (population information).

OPPORTUNITIES

- Public opinion.
- Visible aesthetic degradation raises public awareness.
- Cormorants can actually be used as a surrogate monitor for prey populations.
- Cormorants may actually control overabundant fish populations.

COMMUNICATION/EDUCATION NEEDS

- Public totally unaware/need basic information.
- Public involvement in management process.
- Need to convey that management goals are reasonable.
- Need to convince public that we are responsible (need to take responsible actions so public doesn=t act first).
- Inform public of potential health hazards of double-crested cormorant colonies.

RESEARCH AND INFORMATION NEEDS

- Ability to predict population growth and expansion.
- Ability to predict future impact on the environment and other species.
- Ability to identify potential colonization sites.
- Determine population thresholds for significant impacts to habitat (may be different for different resources).
- How many double-crested cormorants are too many?
- Know more about the potential spread of Newcastle disease to domestic poultry.
- Potential impact of DCC in life cycle of parasites.
- Potential for reducing gull/airport problem by displacement.
- Habitat evaluation studies.
- How to restore habitat (e.g., effects of guano on soil).
- Need to establish repository for information (Colonial Waterbird Registry).
- Better understanding of general biology of double-crested cormorants.
- Need accurate long-term population estimation methods.

RECOMMENDED STRATEGIES:

1. Conduct studies that will provide additional demographic information to support population modeling. (Information lacking on reproductive success on northern breeding areas and survival in southern wintering areas).

2. Initiate and coordinate surveys of DCC populations and monitoring of productivity throughout the Northeast; develop more standard methods for such surveys.

3. Manage DCC populations on a flyway basis: 1) establish DCC Flyway Technical Committee and

2) establish regional population objectives for DCC, but continue to address local issues at the local level.

4. Inventory islands and assess habitat suitability in Northeast (to reflect on potential for expansion of nesting colonies).

5. Develop plans to protect known colonies of colonial nesting birds from DCC invasion.

APPENDIX F

SUMMARY OF THE HUMAN DIMENSIONS BREAKOUT SESSION

Jody Enck and Tommy Brown, Cornell University, Co-Chairs

The 12 participants in the Human Dimensions (HD) breakout session identified initially 25 HD issues pertaining to cormorant management in the Northeast. We consolidated these 25 issues into 12 distinct categories, which are listed below in priority order. One of these, lack of a coordinated and effective communications plan about cormorants, was identified overwhelmingly as the most important human dimensions issue by participants. Three other issues were identified as being of second priority; the remainder were low priority issues.

ISSUES:

- Agencies in the Northeast need to have effective and cooperative communication strategies.
  - Stakeholders are more vocal than governmental agencies.
  - Foster communications between diverse management interests in evolving cormorant management strategies.
  - We as agencies have not convinced stakeholders that we care.
  - Societal attitudes promote suspicion of agencies.
  - Lack of fit between outreach and potential and current scope of the problem.
  - Education outreach to various publics regarding scope of issues.
  - Angling public has strong opinions but inadequate knowledge.
- Stakeholders have unrealistic expectations of agencies. Must define process of management and policy development to promote better interactions with stakeholders.
- What recreational and economic impacts, in relation to ecosystem, health, merit controls? Insufficient human dimensions data to support potential decisions and directions.
- Keep agency partners working together as a unit. Management agencies have conflicting missions and philosophies.
- Lack of sensitivity to public demands ("big brother knows best").
- Political will forcing action that may not be supportable or helpful.
- Assisting affected stakeholders increases tolerance and appreciation of cormorants.
- Stakeholders have polarized values. Agencies unsure how to weight stakeholder interests. Cormorants do have aesthetic value to some but not to others. Perception that all cormorants cost money.
- Public involvement process hasn't involved all stakeholders.

- Stakeholders have unrealistic expectation of fish and wildlife resources.
- Local interests often one-sided and inconsistent with national government policies and organizations' sentiments.
- Importance of terrestrial degradation under-recognized by management agencies.

ISSUE: AGENCIES IN THE NORTHEAST NEED TO HAVE EFFECTIVE AND COOPERATIVE COMMUNICATION STRATEGIES REGARDING CORMORANTS.

ELEMENTS OF DISCUSSION:

SCOPE

- All agencies need strategies, but some have more pressing needs than others.

TIME FRAME

- Quite important immediately, but the kinds of needs and importance may change as cormorant issues evolve over time.

WHY IS IT IMPORTANT?

- Habitat degradation is occurring.
- The public demands action.
- Effective communication is integral to decision making.

BARRIERS

- Individual stakeholders think about cormorant issues from a personal perspective whereas agencies talk about cormorant issues in general terms.
- Stakeholders tend not to be informed about all information.
- Lack of funds.
- Lack of priority.
- Effective communication plans may not be perceived to solve the problem; communication not seen as useful action.
- Lack of biological data.
- People are unwilling to change values.
- Lack of coordination of actions among agencies.

OPPORTUNITIES

- Use cormorant communication strategy to do better job of communicating about overall agency mission.

- Build upon and enhance existing communication mechanisms.
- Enhance agency credibility.
- Project more proactive agency image.
- Communicating with other public agencies (not necessarily natural resource agencies) can lead to enhancements in the environment.
- By communicating better, can develop awareness and interest in public for increasing funding for science.

COMMUNICATION AND EDUCATION NEEDS

- Educate stakeholders on management process.
- Develop and communicate clear messages.
- Communicate about the full scope and facets of the issue (complexity).
- Communicate about products and services already available for addressing cormorant issues.
- Inter and intra agency orientation and education about policies and functions.
- Clear understanding of the problems from the perspective of stakeholders.
- Determination of implementation and delivery systems.

RESEARCH AND INFORMATION NEEDS

- See some of the communication and education needs above.
- Additional biological information (unspecified) as identified by the other breakout groups.
- Identify target audience, including elected officials and their constituents.
- Public attitudes about cormorant issue (generic public and within specific stakeholder groups).

RECOMMENDED STRATEGIES:

1. Northeast Administrators should appoint a team to develop a communication plan.

2. A strong communication element should be included in any regional cormorant management plan that is developed.

3. Communication messages should be developed by an interagency team, including support from the U.S. Fish and Wildlife Service and Sea Grant.

4. Incorporate important research results into the communication plan.

5. Incorporate what we've learned (positive and negative) from previous outreach efforts into communication plan.

6. Identify and describe policies and functions of various agencies regarding cormorants.

7. An interagency team should develop, with various public stakeholder groups, a set of protocols and information needs before any management actions are taken.

8. Obtain information about important tradeoffs stakeholder groups are willing to support or are unwilling to accept.

OTHER ISSUES TO CONSIDER

- Develop guiding principles.
- Consider splitting the issues lumped in the #1 priority issue.
- Economic, recreational, ecosystem and aesthetic concerns.
- Ecosystem integrity.

GENERAL IMPRESSIONS

Misunderstandings, perceived lack of communication, and uncertainty about how best to communicate what messages and with whom all lead to frustration by both federal and state/provincial staff involved with cormorant management. Communication efforts within and among agencies are needed as much as communication efforts between agencies and various stakeholder groups. Further, enhanced intra and interagency communication requires a clear articulation and understanding of terms (e.g., human dimensions, stakeholder, issue, management). Within the breakout group, various definitions of these terms were being applied without discussion of what they really meant. It became obvious that shared understandings did not exist as the discussion proceeded.